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# **Maneuver Warfighter Conference**

## **Gunnery Working Group**

**09 SEP 2014**



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# TC 3-20.0, Integrated Weapons Training Strategy (IWTS) TC 3-20.31, Training and Qualification, Crew Overview

09 SEP 2014

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# Purpose



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Provide an overview of TC 3-20.31, Training and Qualification, Crew, including:

- A review of previous gunnery manual development  
*(Where we've been)*
- An overview of the Integrated Weapons Training Strategy  
*(Where we're going)*
- A review of Final Draft TC 3-20.31, Training and Qualification, Crew  
*(Where we're at)*



# Work Group Objectives



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Have a functional understanding of the:

- Integrated Weapons Training Strategy (IWTS)
- Future manuals, publication, and products under development in support of the IWTS
- TC 3-20.31, Training and Qualification, Crew
  - What do units need to implement the new manual?
  - How can the MCoE best support unit training plans?



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# Where we've been

Evolution of Gunnery Manuals  
1925 - 2012



# History of Gunnery 1920-1980



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1925 - TR 420-275, Tank Combat Practice

1929 - TR 420-270, Tank Marksmanship

1931 - TR 420-270, Tank Marksmanship

1943 - FM 17-12, Tank Gunnery

1944 - FM 17-12, Tank Gunnery

1945 - FM 17-15, Combat Practice Firing Armored Units

1946 - FM 23-100, Tank and Tank Destroyer Gunnery

1950 - FM 17-12, Tank Gunnery

1957 - FM 17-12, Tank Gunnery

1961 - FM 17-12, Tank Gunnery

1964 - FM 17-12, Tank Gunnery

1972 - FM 17-12, Tank Gunnery

1977 - FM 17-12, Tank Gunnery

1978 - FM 17-12-1, Tank Gunnery, XM-1

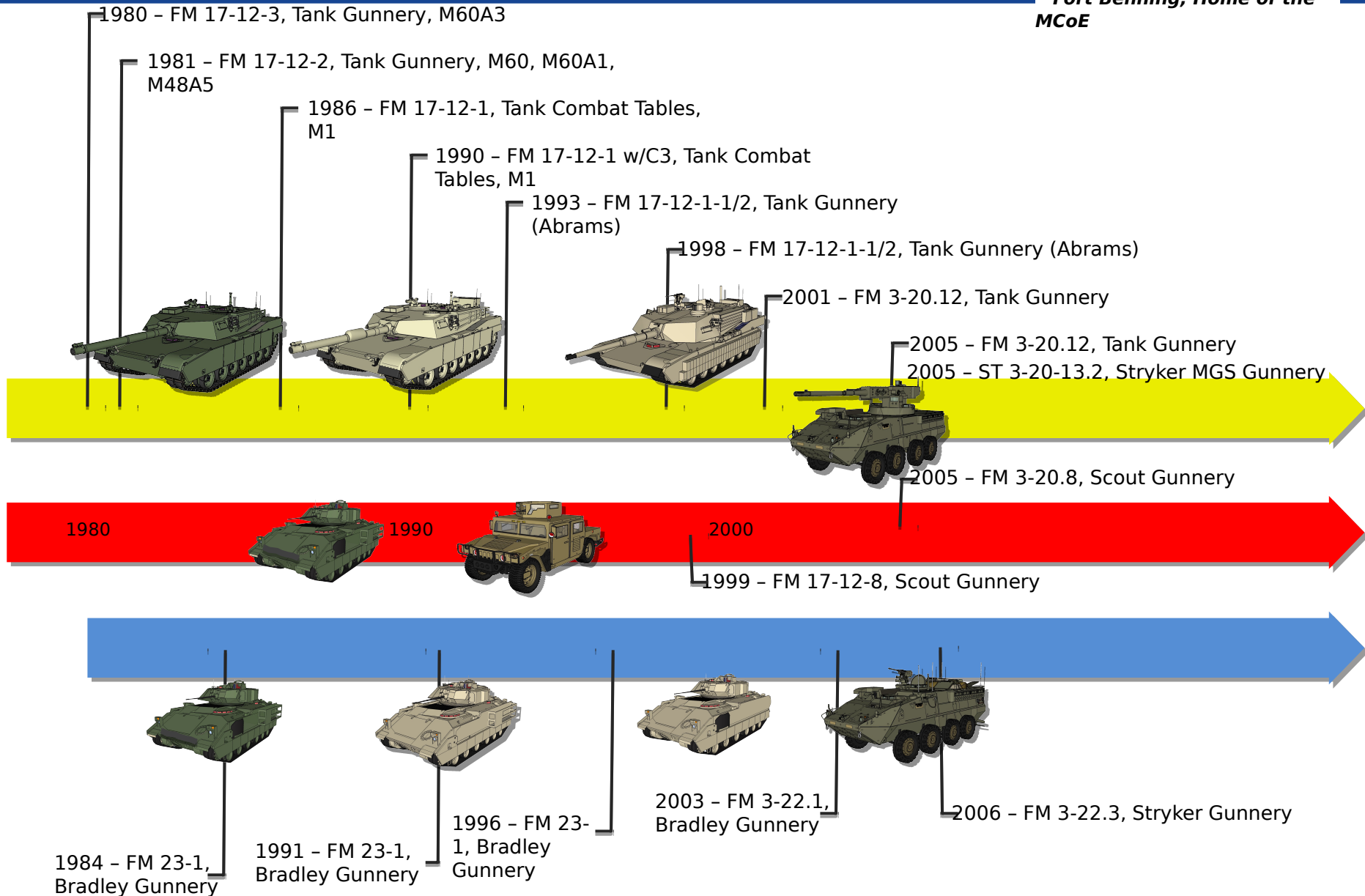
1931 - TR 425-90, Armored Car Marksmanship



# History of Gunnery, 1980 to 2009



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# HBCT Gunnery



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**FM 3-20.12,**  
Tank Gunnery

**FM 3-22.1,**  
Bradley Gunnery

**FM 3-20.8,**  
Scout Gunnery

**FM 3-22.91,**  
Mortar Gunnery  
(120mm only)

**TC 5-150,**  
Engineer Qualification  
Tables (EQT)

**FM 17-12-7,**  
Tank Gunnery  
Training Devices



**FM 3-20.21, SEP**  
2009  
HBCT Gunnery



**TC 4-11.46, APR**  
2010  
*Convoy  
Protection  
Platform Gunnery*

Is it possible to have a Stryker alongside an Abrams, with a lethal dismounted force, UAS interaction, indirect fires, and Aviation support in combat?

**Email, September 2008**  
“...We are excited about the manual in that addresses how the Army fights rather than a more sterile approach to gunnery resident in our old way of doing business” CG TRADOC (GEN Wallace) to GEN Casey & GEN Chiarelli

**Stryker and Mobile Gun Systems were left out of this original manual. The intent was to generate the HBCT specific manual set first, then bring all the platforms together in a Direct Fire Weapons Gunnery Manual for the next update.**





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# Where we're going

Integrated Weapons Training Strategy  
2014 - 2024



# Introduction to the IWTS



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## Integrated Weapons Training Strategy (IWTS)<sup>MCoE</sup>

- Holistic, integrated, standardized training strategy
- Standardization where ever possible and practical
- Synchronized with the ARFORGEN cycle
- Maximize resources
- Secure training requirements
- Provides for common system for all firing systems
- Mutually supported collective training events
- Synchronized with Mortar, Aviation and UAS training
- Developing Basic Rifle Marksmanship Tables that work directly with Dismounted Squad and Platoon Gunnery table set
- Incorporating Engineer Qualification Tables into the system in order to support collective events
- Eliminates the stovepipe training strategy
- Builds upon lessons learned from HBCT Gunnery methodology

# Weapons Training and Qualification

## Training Circular Structure



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### TC 3-20.0 Integrated Weapons Training Strategy

The Integrated Weapons Training Strategy describes how all weapons and direct fire system training interacts as a holistic training strategy.

Initial Draft

**TC 3-20.1**  
Training and Qualification, CALFEX, Bn LFX and FCX Exercises. Readiness exercises detail how to plan, prepare, and conduct Company / Team Combined Arms Live Fire Exercises and Bn Fire Coordination Exercises.

Development

**TC 3-20.2**  
Training and Qualification, Section and Platoon Integrated collective exercises describes all training requirements for Section and Platoon live-fire events through qualification.

Development

**TC 3-20.31**  
Training and Qualification Crew Training and Qualification, Crew describes all requirements, ammunition, ranges, and live-fire prerequisites required for all stabilized and unstabilized platforms (Abrams, Bradley, Stryker, Stryker MGS, truck).

Awaiting Signature

**TC 3-20.32**  
Training and Qualification Squad Training and Qualification, Squad is an update to TC 7-9, Infantry Live Fire Training that includes Buddy Team, Fire Team, Squad, and Engineer Qualification Tables (EQT). For Cavalry formations, publication will include Dismounted Cavalry Squad.

Development

**TC 3-20.33**  
Training and Qualification Mortars Training and Qualification, Mortars includes all requirements to train, certify, and qualify Fire Direction Center (FDC), mortar crews, and mortar sections.

Development

**TC 3-20.4**  
Training and Qualification Individual and Crew Serve Weapons Training and Qualification, Individual and Crew Serve Weapons detail all requirements for certification and / or qualification on all Individual and Crew Serve Weapons including Sniper, pistol, rifle / carbine, shoulder launched munitions and machine guns.

Development



# FY vs. ARFORGEN

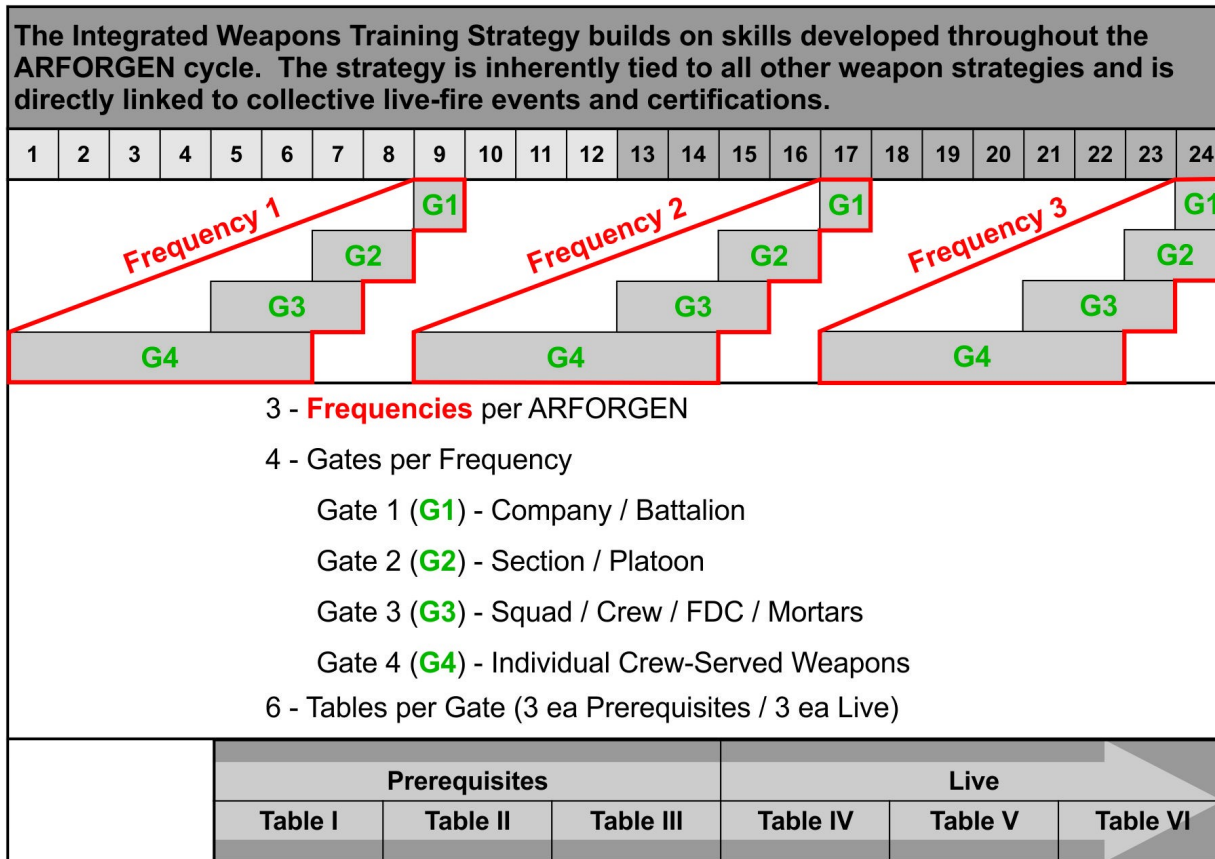


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## Today's AC Gunnery Model Over 24 Months (2 ea Fiscal Years)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
				Gunnery or Wpns Qual								Gunnery or Wpns Qual								Gunnery or Wpns Qual			

Current strategy contains 2 gunneries per year – 4 gunneries over 24 months.

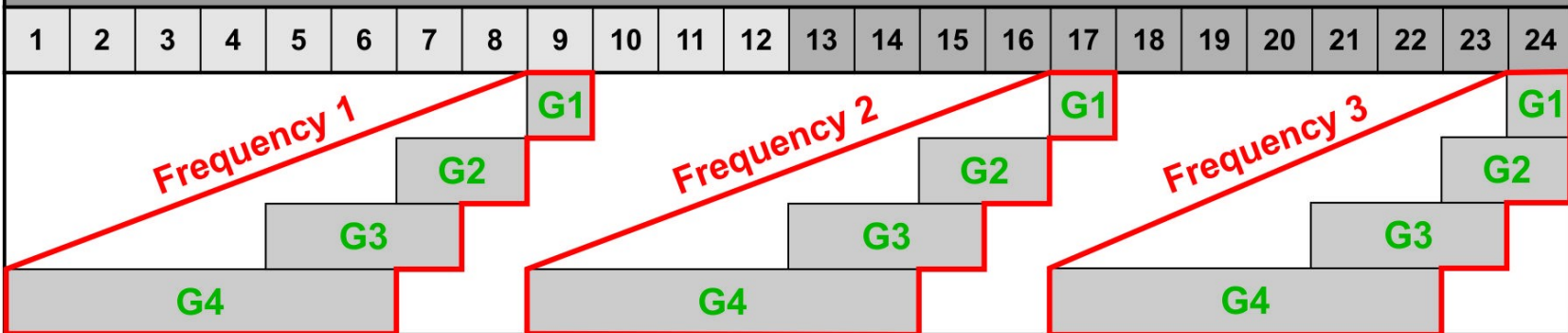




# IWTS Synch with the ARFORGEN Cycle

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The Integrated Weapons Training Strategy builds on skills developed throughout the ARFORGEN cycle. The strategy is inherently tied to all other weapon strategies and is directly linked to collective live-fire events and certifications.



3 - **Frequencies** per ARFORGEN

4 - Gates per Frequency

Gate 1 (**G1**) - Company / Battalion

Gate 2 (**G2**) - Section / Platoon

Gate 3 (**G3**) - Squad / Crew / FDC / Mortars

Gate 4 (**G4**) - Individual Crew-Served Weapons

6 - Tables per Gate (3 ea Prerequisites / 3 ea Live)

	Prerequisites			Live		
	Table I	Table II	Table III	Table IV	Table V	Table VI



# WTS Synch with the ARFORGEN Cycle



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	Prerequisites			Live		
	Table I	Table II	Table III	Table IV	Table V	Table VI
<b>Gate 1</b> Unit to T-1 TC 3-20.1 CALFEX / FCX / LFX	SOP	Simulations	Maneuver	STX	Rehearsal	Qualification
<b>Gate 2</b> Unit to T-2 TC 3-20.2 Section / Platoon	SOP	Simulations	Maneuver	STX	Rehearsal	Qualification
<b>Gate 3</b> Unit to T-3 TC 3-20.3X Squad / Crew / FDC / Mortar	GST / SOP	Simulations	Proficiency / Drills / Maneuver	Basic	Practice / Rehearsal	Qualification
<b>Gate 4</b> Unit to T-4 TC 3-20.4 Individual / Crew Served	PMI&E	Simulations	Drills	Group / Zero	Practice	Qualification



# Training Horizon for a Gunnery Density



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## Gunnery Conducted By Echelon Example

Training Week:	T-14	T-13	T-12	T-11	T-10	T-9	T-8	T-7	T-6	T-5	T-4	T-3	T-2	T-1	T	T	T
Gate 1 CALFEX / FCX									Garrison							Live-Fire	
Gate 2 SEC / PLT									Garrison						Live-Fire		
Gate 2 MTR									Garrison						Live-Fire		

Training Week:	T-7	Garrison						Live-Fire		T+1	T+2	T+3	T+4	T+5	T+6	T+7
Gate 3 SQD / CREW / FDC / MTR																

Garrison	Live-Fire						
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Training Week:	T-3	T-2	T-1	T	T	T	T	T	T	T	T+1	T+2	T+3	T+4	T+5	T+6	T+7
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# Where we're at

TC 3-20.31  
Training and Qualification, Crew  
2014



# Weapons Training and Qualification

## Training Circular Structure



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Development



# TC 3-20.31, Training and Qualification, Crew



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## **TC 3-20.31** Training and Qualification Crew

Training and Qualification, Crew describes all requirements, ammunition, ranges, and live-fire prerequisites required for all stabilized and unstabilized platforms (Abrams, Bradley, Stryker, Stryker MGS, truck).

- Introduction
- Crew Training Program
- Range Operations
- Range Requirements and Scenario Development
- Crew Tables
- Crew Evaluation

### **Resources**

Ammunition

Ranges

Land

Simulations and Gaming

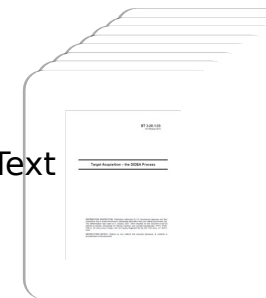
- Commander, staff, and Master Gunner reference.
- Enduring publication, updates on standard 3-year cycle.
- Planner's guide to Crew Training. Development for Short Range Planning.
- How to maximize TADSS, simulations, and gaming into crew training programs.
- Applied only to Combat Arms MOS

### Supporting Text TC - **1X**



- TC 3-20.31-10, GST (*ST 3.20.21-1*)
- TC 3-20.31-11, VCEEP (*TC 3-20.21-2*)
- TC 3-20.31-12, TADSS
- TC 3-20.31-13, DIDEA

### Platform Specific Text TC - **2X**



- TC 3-20.31-20, M1A1
- TC 3-20.31-21, M1A2
- TC 3-20.31-22, Bradley A3
- TC 3-20.31-23, Bradley ODS
- TC 3-20.31-24, Stryker
- TC 3-20.31-25, MGS

### Applied System Text TC- **3X**



- TC 3-20.31-30, CROWS / RWS
- TC 3-20.31-31, ITAS
- TC 3-20.31-32, TUSK
- TC 3-20.31-33, BUSK



# Key Components



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- Updates to Fire Commands
- Standardized table sets
  - Stabilized
  - Unstabilized (including Stryker, RWS/CROWS equipped trucks)
- ATGM / TOW requirements
- Call-For Engagements
- Digital Engagement requirements

Goal: Commonality across multiple platforms to reduce learning / training curve, improve standardization, and synchronize with the ARFORGEN cycle



# Key Components



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- Standardizes **ALL** maneuver platform qualifications
- Enables single scenario (same range use) for ALL stabilized platforms within the BCT
  - Abrams (all variants)
  - Bradley (all variants)
  - **Stryker MGS and Stryker ATGM**
- Enables single scenario (same range use) for ALL unstabilized and RWS equipped platforms
  - Truck (Scout and other)
  - PC
  - Stryker (with and without RWS)
  - ASV
  - AAV (USMC)



# TC Outline



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- Chapter 1 – Overview
- Chapter 2 – Crew Training Program
- Chapter 3 – Range Operations
- **Chapter 4 – Engagement Process**
- Chapter 5 – Range Requirements and Scenario Development
- Chapter 6 – **Crew Tables (*Gate 3*)**
- Chapter 7 – Crew Evaluation
- Appendix A – Targetry and Panels



# Crew Evaluation



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- New Score Sheet
- No Threat Matrices – Engagement Modifier
- Crew Penalties





# COMMON CREW GUNNERY ENGAGEMENT MODIFIER (EM) CALCULATION

For use of this form, see TC 3-20.31, Training and Qualification, Crew Gunnery. The proponent agency is TRADOC.

Section I	Engagement Notes	Instructions	1. Target 1	2. Target 2	3. Target 3	4. Target 4																																												
<b>Firer</b> Abrams Gunner 0 Bradley or ATGM 1 MGS 2 RWS or CROWS 3 Unstab or Loader 4 RWS (MK 19) 5 Unstab (MK 19) 6	<p><b>Find values in Section I thru Section V and move to blocks a. thru e. on corresponding target.</b></p> <p><b>Add total for each target in block f.</b></p>	Select the point value for the specific firer of the target from Section I.  4  (+)	a.  4  (+)	a.  0  (+)	a.    (+)																																													
<b>Section II</b> <b>Firing Vehicle Posture</b> Defense 3 Offense 7		Select the point value for the Firing Vehicle Posture for the engagement from Section II.  3  (+)	b.  3  (+)	b.  3  (+)	b.    (+)																																													
<b>Section III</b> <b>Target Type</b> Armored 0 Light Armored 1 Unarmored 2 Troops, RPG, Sniper 3		Select the point value for the intended Target Type using Section III.  2  (+)	c.  2  (+)	c.  3  (+)	c.    (+)																																													
<b>Section IV</b> <b>Target Posture</b> Stationary Frontal 1 Stationary Flank 2 Moving 3 Evasive (Direction Change) 4		Select the point value for the intended Target Posture using Section IV.  1  (+)	d.  1  (+)	d.  1  (+)	d.    (+)																																													
<b>Section V</b> <b>Range to Target</b> 0000 to 0400 meters -1 0401 to 0600 meters 1 0601 to 1200 meters 2 1201 to 1800 meters 3 1801 to 2100 meters 4 2101 to 2400 meters 5 2401 to 2800 meters 6 2801 to 3100 meters 7 > 3101 meters 8		Select the point value for the Range to Target for the engagement using the values in Section V.  -1  (+)	e.  2  (+)	e.  1  (+)	e.    (+)																																													
<b>Target Engagement Time</b>		Determine the Target Modifier by adding all appropriate blocks for each target presented. (Total EM)  9  (=)	f.  12  (=)	f.  8  (=)	f.    (=)																																													
<b>Points</b>																																																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
	99	97	96	94	93	91	89	88	86	85	83	81	80	79	78	77	75	73	72	70	65	60	55	50	45	40	35	30	25	20	15	10	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		





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# Discussion

- What do units need to implement the new manual?
- How can the MCoE best support unit training plans?

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**Unclassified / FOUO**

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# Break



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# Master Gunner Course Update



# MWFC: **Gunnery Working Group**

INTEGRATION OF TC 3-20.31



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- Definitive date in which IWTS will supersede the current HBCT Gunnery?
- Grace period in which the POI's can implement a pilot program?
- Impact on POI to teach small arms, individual crew served, and collective/CALFEX off a pre-decisional draft.



# MWFC: **Gunnery Working Group**

## MASTER GUNNER POI: AMG, BMG, MGS



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### *M1A1 Master Gunner Course (A8)*

- Mission - To train selected Non Commissioned Officers to assist unit leaders in the planning and implementation of gunnery training programs and maintenance training (Turret and Fire Control and Training Management).
- Duration - 11 weeks
- Student Throughput:  
Maximum - 18 Per Class  
Minimum - 6 Per Class  
FY13 Total - 25  
FY14 To date - 15  
FY14 Projected ~ 47  
Courses FY14: 3 FY15: 2



### *M1A2 SEP Master Gunner Course (K8)*

- Mission - To train selected Non Commissioned Officers to assist unit leaders in the planning and implementation of gunnery training programs and maintenance training (Turret and Fire Control and Training Management).
- Duration - 11 weeks
- Student Throughput:  
Maximum - 18 Per Class  
Minimum - 6 Per Class  
FY13 Total - 60  
FY14 To date - 32  
FY14 Projected ~ 54  
Courses FY14: 3 FY15: 3



### *Bradley Master Gunner Course*

- Mission - To train selected Non Commissioned Officers to assist unit leaders in the planning and implementation of gunnery training programs and maintenance training (Turret and Fire Control).
- Duration - 14 weeks, 2 days
- Student Throughput:  
Maximum - 40 Per Class  
Minimum - 20 Per Class  
FY13 Total - 149  
FY14 To date - 83  
FY14 Projected ~ 200  
Courses FY14: 5 FY15: 3



### *MGS Master Gunner Course (R8)*

- Mission - To train selected Non Commissioned Officers to assist unit leaders in the planning and implementation of gunnery training programs and maintenance training (Turret and Fire Control and Training Management).
- Duration - 8.5 weeks
- Student Throughput:  
Maximum - 6 Per Class  
Minimum - 2 Per Class  
FY13 Total - 11  
FY14 To date - 16  
FY14 Projected ~ 20  
Courses FY14: 4 FY15: 5





# MWFC: *Gunnery Working Group*

## MASTER GUNNER COURSE PRE-REQUISITES



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### *M1A1 Master Gunner Course (A8)*

- SGT (P) to SFC, 19K MOS.
- Received M1A1 base line training.
- One year experience as a tank commander, with at least 6 months experience as an M1A1 tank commander (waiverable)
- Qualified as an M1A1 tank commander on Gunnery Table VI, within 12 months (24 months reserve), or fired the M1A1 during NETT (waiverable).
- Passed all Gunnery Skills Test (GST) Common Tasks, Abrams Tasks, and all Gunnery Table I Abrams Tasks within three months
- Must have a GT score of 105 and a CO score of 110 (a 5 point waiver may be granted for either the GT or CO score, not both).

### *M1A2 SEP Master Gunner Course (K8)*

- SGT (P) to SFC, 19K MOS
- Received M1A2 SEP base line training.
- One year experience as a tank commander, with at least 6 months experience as an M1A2 SEP tank commander (waiverable).
- Qualified as an M1A2 SEP tank commander on Gunnery Table VI within 12 months (24 months reserve), or fired the M1A2 SEP during NETT (waiverable).
- Passed all Gunnery Skills Test (GST) Common Tasks, Abrams Tasks, and all Gunnery Table I Abrams Tasks within three months.
- Minimum GT score of 105 and a CO score of 110 (a 5 point waiver may be granted for either the GT or CO score, not both).

### *Bradley Master Gunner Course (J3)*

- SGT(P) (4 years TIS and a WLC graduate) through SFC with MOS of 11B, 12B, 13F, 19D
- Minimum GT score of 100
- COFT / BATS IO certified within one year of attendance
- GST within 6 months of attendance,
- Gunnery Table 6 qualified as VC or Gunner within past year.

### *MGS Master Gunner Course (R8)*

- SGT (P) to SFC, 19K R4,
- Must have a minimum of one year experience as an MGS Commander.
- Qualified as an MGS Commander on MGS Gunnery Table VIII within the past 12 months (24 ANG).
- Soldier has passed all Crew Gunnery Skills Test (CGST) within 90 days prior to attending this course. Must have a GT score of 105 and a CO score of 110 (a 5 point waiver may be granted for either the GT or CO score, not both).



# MWFC: **Gunnery Working Group**

## STUDENT TRENDS WITHIN AMG, BMG, MGS



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### Graduation Rates Among Master Gunner Students

#### Abrams Master Gunner (A1/A2)

FY 12 - 70%  
FY 13 - 62%  
FY 14 - 83%

#### Bradley Master Gunner (A3)

FY11 - 76%  
FY 12 - 69%  
FY 13 - 80%  
FY 14 - **currently at 58%**

Emerging trends within Students since FY13:

12% of BMG Students failed their Gunnery Skills Test on Day 0 (course pre-req).

Importance of sending students to the Bradley Training and Assessment Course or Abrams Training and Assessment Course.

Since BMG Class 001-13, a total of 55 students have attended BTAC. Of those 55, 53 graduated from BTAC, and of those 53, all 53 graduated when they attended BMG School.

BTAC/ATAC offered by WTC and begins 2 calendar weeks before the start of it's respective MG School. Both course's POI is nested with their respective counterpart and updated as changes to AMG/BMG POI's are made.

SABOT Academies at the BCT and below level with input from the schools, setting the Soldier up for success.



# MWFC: **Gunnery Working Group**

## AMG/BMG COMMON CORE



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Students would “touch” at 3 points throughout their respective POI – start (APFT, conduct in brief, MRT, and CSF2), common core tasks, and the Unit Training Plan (UTP).

- DIDEA (Detect, Identify, Decide, Engage, Access) Targeting Process
- Machine Guns (M2, M240, MK19)
- Ammo Capabilities
- Firing Tables
- Surface Danger Zones
- Training Devices
- Plan and Conduct Gunnery Tables
- Training Management